REMARKS

Claims 1-8, and 10-47 are pending in the application.

Claim Rejections – 35 USC 101

The Examiner rejected claims 1-8, 10-39, and 46-47 under 35 USC 101 as not directed to practical applications. The Examiner further argued that these claims simply manipulate abstract ideas and that these claims are also outside the four statutory categories of invention.

The present application describes a *computer* invention which is directed to practical application.

More particularly, claim 1 is amended to define a *computer implementing a virtual object* wherein the product comprises the computer and the virtual object, claims 2, 14 and 16 are amended to define a *computer implementing a virtual environment*, wherein the product comprises the computer and the virtual environment, and claims 40, 43 and 46 are amended to define *a method*, to be performed on a computer.

It is thus respectfully believed that all independent claims as currently amended are directed to practical application, and should be allowed.

Claim Rejections – 35 USC 103

In this section of the official action, Claims 1 – 8, 10 – 39, and 27 – 47 were rejected under 35 USC 103 as being unpatentable over Gadh U.S. Patent No. 6,629,065, in view of Vrobel US Patent No. 6,781,597.

The present invention teaches a virtual object for use in a computer embodied virtual environment.

The present invention introduces the idea of *an object internal co-ordinate system supported natural language* describing locations in a virtual environment, in relation to the object, as described in detail below for claim 1.

The natural language taught by the present facilitates *a logical query for selecting several objects for positioning*, as described on page 31, in lines 3-5: "Selection of objects for positioning may be carried out explicitly or it may be carried out logically. Logical selection is carried out using a logical query, for example by selecting all objects that are red. Thus for example it is possible using selection and natural language interaction to select and stack all red tables."

The present invention further discloses a virtual object having an associated menu of available interactions with other objects or object types that is changeable dynamically in accordance with changes of available interactions consequent upon the changes in state.

Gadh US Patent No. 6,629,065 deals with computer aided design tools (CAD). Gadh discloses commands for positioning of elements in a CAD environment. However, these commands are limited to alignment of a child element with his parent element, *with respect to a display view*.

Vrobel US Patent No. 6,781,597, as described in the field in the invention section, pertains to computerized three dimensional geometric modeling systems, and particularly to the editing of solid shapes. Vrobel does not teach or even hints at any of the above ideas, as taught by the present inventions.

Claim 1 defines a computer implementing a virtual object for use in a virtual environment, the virtual object comprising at least a visible appearance element, and an object internal coordinate system supporting

natural language positional commands in relation to the virtual object, the commands being for automatic, command based positioning within the virtual environment with respect to the virtual object, and having at least one docking location defined within the internal coordinate system, the docking position being defined for at least one of another object and an object type as a default location when the other object or object type is brought into association with the virtual object.

The present invention introduces the novel and inventive idea of *an object internal co-ordinate system supporting natural language* describing locations in a virtual environment. Each virtual object has its own independent internal coordinate system in relation to which movements, placing etc. can be described. Thus "up" and "down" may be in relation to that particular object. A separate "up" and "down" may then be defined for another object. Each object thus utilizes its associated internal coordinate system, as described under "Natural Language Positioning", on page 26: "In a more specific embodiment however, an adapted Cartesian coordinate system is used for describing locations in the virtual environment, relative to the position of the pre-selected point 915 of the object 900. The specific embodiment for the *virtual object associated coordinate system* 950, allows locations to be described using words such as up, down, left, right, forwards and backwards to indicate the opposite directions along the three axes, wherein the orientation of the axes is fixed with respect to the directions of the bounding box 920 dimensions of height 922, width 924 and depth 926, and preferably parallel with them. The basic unit of length in the up-down direction, along the up-down axis is the height of the bounding box. Likewise, the basic unit of length in the forwards-backwards direction, along the forwards-backwards axis is the depth of the bounding box. Likewise, the basic unit of length in

the left-right direction, along the left-right axis is the width of the bounding box. Expressing distances and direction in terms of the size and orientation of the bounding box from a pre-selected point associated therewith, provides *a natural language for identifying locations in virtual space* with respect to the bounding box, as is described below.

Thus the present invention introduces a novel and inventive idea of a natural language for positioning with respect to an object, using an internal co-ordinate system, which is associated with the object.

Gadh discloses commands for positioning of elements in a CAD environment. However, these commands are limited to alignment of a child element with his parent element, *with respect to a display view*, as described in column 24, lines 6-63 and illustrated in Fig. 25A-D: " The *Alignment Operation* provides another means....such as "Align with left edge of [parent element]", "Align with right edge of [parent element],etc. In other words, the *VDSF display viewed by the user is considered as having a right-left/top-bottom/front-rear coordinate system"* and the terms do not refer to an object internal co-ordinate system at all, contrary to the currently amended claim 1.

Thus a natural language command for right positioning according to the present invention may produce a totally different positioning than a right alignment command according to Gadh. Claim 1 requires a natural language that refers back to the object whereas Gadh teaches a natural language that refers to the current screen view and is simply used to correct user commands for different viewing angles.

The Examiner argues that Vrobel introduces a docking mechanism as taught by the present invention. However, Vrobel also falls short of introducing an object internal co-ordinate system that supports natural language, as taught by the present invention. Thus it is respectfully believed that claim 1 should be allowable as both novel and inventive over the prior art.

Claim 14 defines a computer implementing a virtual environment for user interaction, comprising at least a first virtual object and a second virtual object and at least a relationship between them, wherein the relationship is selectable to specify, using an *object internal coordinate system supported natural language* positioning command, an action of the second object and the relationship is defaulted according to at least one of the first virtual object, the second virtual object, a type of the first virtual object and a type of the second virtual object.

As described above, neither Gadh nor Vrobel reaches or even hints at such a computer embodied virtual environment wherein a relationship between virtual objects is selectable to specify actions using an *object internal coordinate system supported natural language* positioning command, as taught by the present invention.

Thus it is respectfully believed that claim 14 should be allowable, as both novel and inventive over the prior art.

Claim 16 defines a computer implementing a three dimensional virtual environment comprising at least one three dimensional virtual object and having a series of potential relationships of the virtual object with a

relating other virtual object, each of the relationship comprising a default

relative position selected according to at least one of the relating other

object and a type of the relating other object, the object having a tool tip

facility and being selectable to display a tooltip, via the tooltip facility, the

tooltip indicating at least some of the potential relationships, for interaction

therewith in the virtual three dimensional environment via positioning

commands of *a positioning object internal co-ordinate system supported*

natural language, thereby to apply the default relative position by

selection of one of the potential relationships.

As explained above, Neither Gadh nor Vrobel discloses or even hints at a computer

embodied three dimensional virtual environment wherein a relationship between two

virtual objects is specified using *an object internal co-ordinate system supported*

natural language positioning command, or a tooltip facility, as taught by the present

invention.

Thus it is respectfully believed that claim 16 should be allowable, as both

novel and inventive over the prior art.

Claim 40 defines a method, to be performed on a computer, for moving a first virtual

object from a first position to a selected second position associated with a second

virtual object, within a virtual environment, each virtual object being approximated by

a bounding box and having a respective internal co-ordinate system, the method

comprising: selecting the first virtual object, defining a move of the first virtual

object into proximity of the second virtual object using the first virtual object internal

co-ordinate system, and *a positioning command in a natural language, supported by*

the first virtual object internal co-ordinate system, operatively associating the first

virtual object with the second virtual object, and positioning the first virtual object

with respect to the second virtual object *in terms of the first virtual object internal co-*

ordinate system into a docking position, the docking position being a default position

defined according to at least one of a first group comprising the first virtual object

and a type of the first virtual and at least one of a second group comprising the second

virtual object and a type of the second virtual object.

Neither Gadh nor Vrobel discloses or even hints at a method for moving a

first virtual object from a first position to a selected second position

associated with a second virtual object, comprising defining a move of a

first virtual object into proximity of the second virtual object using a

positioning command in a positioning *natural language, supported by the*

first virtual object internal co-ordinate system, as taught by the present

invention.

Thus it is respectfully believed that claim 40 should be allowable, as both

novel and inventive over the prior art.

Claim 43 defines a method, to be performed on a computer, for constructing a menu

of available and permitted user interactions with a first object having at least one user

definable relationship within a virtual environment which supports the default

relative positioning between two virtual objects, the method comprising:

constructing a list of a priori user interactions characteristic of the first object,

adapting the list of user interactions by addition of a further list of optional

interactions that characterize the at least one user definable relationship with a second

object, and providing the list as a menu, to be invoked by interacting with one of the

virtual objects thereby to create a series of available default positioning commands,

in an object internal co-ordinate system supported natural language, for the first object

in relation to the second object.

Neither Gadh nor Vrobel teaches or even hints at a method for constructing such a

menu, of user defined relationships between two virtual objects, as taught by the

present invention.

Furthermore neither Gadh nor Vrobel teaches or even hints at the idea of an object

internal co-ordinate system, as taught by the present invention.

Thus it is respectfully believed that claim 43 should be allowable, as both

novel and inventive over the prior art.

Claim 46 defines, within a computer implementing a virtual environment and a first

virtual object having an associated menu of *available interactions with other virtual*

objects, at least some of the objects belonging to an object type, the object having

dynamically changeable states, the menu being changeable dynamically in accordance

with changes of available interactions with surrounding objects consequent upon the

changes in state, the menu permitting a user to define for at least one surrounding

object or at least one surrounding object type at least one default association position,

such that the position of the first virtual object in relation to the surrounding object is

defaultingly selected according to at least one of a group comprising the interaction

selected, the first object, the first object type, the surrounding object the surrounding

object type.

The Examiner refers to Fig. 4 to argue that Gadh teaches a menu as described in claim 46. However, Fig.4 depicts only a drag and drop mechanism for moving objects, which has nothing to do with the menu as taught by the present invention.

Neither Gadh nor Vrobel teaches or even hints at virtual object having such a menu of *available interactions between two objects* that can be defaulted according to the interaction selected and the object, and the object type involved, as taught by the present invention.

Thus it is respectfully believed that claim 46 should be allowable, as both novel and inventive over the prior art.

The remaining claims mentioned in this section of the Office Action are believed to be allowable as being dependent on an allowable main claim. No new matter is added by the present amendments.

All of the matters raised by the Examiner have been dealt with and are believed to have been overcome. In view of the foregoing, it is respectfully submitted that all the claims now pending in the application are allowable over the cited reference. An early Notice of Allowance is therefore respectfully requested.

Respectfully submitted,

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